

Taxonomic Review of the Family Cimbicidae (Hymenoptera, Symphyta) from Korea

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Abstract The family Cimbicidae (Hymenoptera: Symphyta) was reviewed using 500 specimens from Korea, Japan and some reference specimens from outside the country. As result, total of 22 species and 10 genera in two subfamilies were recognized including three species (*Zaraea aurata* Takeuchi, *Zaraea fasciata* Linnaeus, *Agnocimbex eoa* Semenov-Tian-Shanskij) new to Korea peninsula.

Key words Symphyta, Cimbicidae, Cimbicinae, Abiinae, Korea, taxonomy, review

INTRODUCTION

The family Cimbicidae is a moderately small, containing approximately 150 species in the world (Smith, 1993). In Korea, 19 species and nine genera were studied by Radoszkowski (1890), Uchida (1928), Takeuchi (1931, 1939), Cho (1955, 1961), Togashi (1973), Shinohara (1990) and (Shin *et al.*, 1994).

Recently Kim and Shinohara (1997) added a unrecorded genus *Praia*, to Korean fauna.

In the present work, the morphological terminology and indices are followed from Lee and Ryu (1989) and Lee *et al.* (1996). The specimens were collected from the southern part of Korean peninsula from March 1997 to September 1999. Specimens were also loaned from museums and institutions in Korea and Japan as follows.

AU: Andong National University, CIS: Center for Insect Systematics, Korea, EWU: History Museum, Ewha Womans University, Seoul, KJU: Konkuk University, KSNU: Kyungsang National University, KU: Korea University, NSMT: National Science Museum (Natural History), Tokyo, KNU: Kyungbook National University, KGNU: Kangwon National University, CU: Changwon National University, SNU: Seoul National University, SWU: Sungshin Womans University, YNU: Yeungnam University, Korea.

Also, some abbreviations of regional name in Korea used in this paper are as follows: CB: Chollabuk-Do, CHB: Chungchungbuk-Do, CJ: Cheju-Do, CN: Chollanam-Do, KB: Kyongsangbuk-Do, KG: Kyonggi-Do, KN: Kyongsangnam-Do, KW: Kangwon-Do, NK: North Korea.

Some abbreviations and indices used in this paper are as follows: IOD: Distance between lateral ocellus

* This paper was supported by research fund of Yeungnam University (1999)

and median ocellus, OOD: Distance between lateral ocellus and compound eye, POD: Distance between lateral ocellus and occipital carina, MOD: Maximum diameter of lateral ocellus.

SYSTEMATICS

FAMILY CIMBICIDAE

Key to subfamilies and genera of Korean Cimbicidae

1. Anal cell of fore wings with a cross vein Abiinae 2
- Anal cell of fore wings contracted at middle Cimbicinae 4
2. Tarsal claws simple Genus *Zaraea* 3
- Tarsal claws cleft 3
3. Inner tooth of tarsal claws shorter and usually narrower than the apical tooth. Clypeus truncate or slightly emarginate Genus *Abia* 4
- Inner tooth of tarsal claws longer and broader than the apical tooth. Clypeus deeply emarginate Genus *Orientabia* 4
4. Labrum large, well exerted 5
- Labrum small, not or scarcely exerted 7
5. Hind femora toothed beneath. Labrum and clypeus black Genus *Trichiosoma* 6
- Hind femora simple. Labrum and clypeus yellow 6
6. Head and thorax covered with long hairs. Antennae with four segments before the club, the last stout and without segmentation Genus *Pseudoclavellaria* 7
- Head and thorax not covered with long hairs. Antennae with five segments before the club, the last slender and with distinct segmentation Genus *Leptocimbex* 7
7. Hind coxae well separated at base. Head strongly enlarged behind eyes. Second anal cell of hind wings closed Genus *Cimbex* 8
- Hind coxae continuous at base. Head not or but scarcely enlarged behind eyes. Second anal cell of hind wings open, without a cross vein 8
8. Tarsal claws cleft Genus *Agenocimbex* 8
- Tarsal claws simple Genus *Praia* 8

Subfamily Abiinae 구리수중다리잎벌아과

Genus *Abia* Leach, 1817 구리수중다리잎벌속

Abia Leach, 1817, The Zool. Misc. 3: 113. Type species: *Tenthredo sericea* Linnaeus (Designated by Curtis, 1825).

Parabia Semenov-Tian-Shanskij, 1891, Horae Societatis Entomologicae Rossicae 25: 174. Type species: *Parabia jakowlewi* Semenov (Original designation).

***Abia formosa* Takeuchi, 1927** 구리수중다리잎벌

(Figs 1, 21, 41, 55)

Abia formosa Takeuchi, 1927, Trans. Nat. Hist. Soc. 17: 201; Takeuchi, 1931: 20; Semenov-Tian-Shanskij & Gussakovskij, 1937: 8; Takeuchi, 1939: 436; Gussakovskij, 1947: 215; Shinohara, 1990: 113; Kim *et al.*, 1994: 218.

Zaraea iridescens: Kim (not Marlatt), 1963, The Humanities and Science, Natural Science 6: 280; Kim, 1968: 140.

Abia iridescens: Kim (not Marlatt), 1970, Illustrated Encyclopedia of fauna and Flora of Korea II, Insecta 3: 152, 720; Kim, *et al.*, 1974: 231; Yoon *et al.*, 1980: 150; Chang *et al.*, 1982: 535; Kim *et al.*, 1987: 511; Kim *et al.*, 1991: 113; Kim *et al.*, 1993a: 70; Park *et al.*, 1993: 213; Kim *et al.*, 1994: 218.

Diagnosis. Head strongly enlarged behind the eyes. Clypeus very shallowly emarginated for its entire width. Propodeum with distinct and dense punctures except the posterior margin. Wings yellowish hyaline. Anterior half of fore wings distinct. Anal cell a little muddy. Abdomen metallic black and the last tergite brown.

Measurement. OOD/MOD: 0.92, POD/OOD: 4.77, MOD/IOD: 0.68, OOD/IOD: 0.62, Body length: 12.6 mm, Fore wing length: 11.8 mm, Hind wing length: 7.9 mm.

Specimens examined. YNU: KW- 1 ♀, Cheolram, Taebaek, 9. V. 1991 (J.K. Kim); KG- 1 ♀, Mt. Cheonggye, 20. V. 1986 (A.J. Shin); 1 ♀, Yeckol, Seongnam-shi, 30. V. 1991 (Y.J. Chang); CB- 1 ♀, Cheondong-ri, Danyang-gun, 13. V. 1994 (S.M. Ryu); 1 ♀, Sojeong-ri, Unbuk, Okcheon, 29. V. 1991; CN- 1 ♀, Mt. Kyeryong, 26. V. 1974 (U.Y. Lee); KB- 1 ♀, Bulyeongkyegok, Ulchin, 9. V. 1991 (H.K. Kim); 1 ♀, 10. V. (S.H. Cho); 2 ♀, 10. V. (S.M. Chang); 1 ♀, 10. V. (T.Y. Lee); 1 ♀, 11. V. (S.Y. Park); 1 ♀, Mt. Daedeoksan, Taegu, 5. V. 1996 (E.S. Park); 2 ♀, Yeungnam Univ., Kyongsan-shi, 17. V. 1987 (J.S. Ko); 1 ♀, 30. IV. 1988 (E.S. Kim); 1 ♀, 11. IV. 1991 (J.I. Park); 1 ♀, 18. V. (H.J. Kang); 1 ♀, 21. VI. 1993 (H.Y. Kang); JN- 1 ♀, Bogil-do, 12. V. 1996 (Y.S. Kim); 1 ♀, 12. V. 1996 (J.H. Bae); 1 ♀, 11. V. 1996 (M.Y. Chung); CJ- 1 ♀, Mt. Sanbang, 4. V. 1978 (J. W. Lee); 1 ♀, Chugmoon, 3. V. (J.W. Lee). KU: KG- 1 ♀, Mt. Wangpang, Pocheon, 29. V. 1983 (M.S. Joo); SWU: KG- 1 ♀, Bogwangsa, 19. VI. 1978 (W. Lee). KSNU: JN- 3 ♀, Wando, 23. IV. 1961 (K.J. Park). SNU: KG- 1 ♀, Suwon, 27. IV. 1959 (Baek).

Distribution. Korea, Japan, and Taiwan.

***Abia semenoviana* Gussakovskij, 1947** 청동수중다리잎벌

(Figs 2, 31)

Abia berezowskii: Takeuchi, 1939: 436 [in part]; Chu, 1969: 296; Togashi, 1973: 110; Kim *et al.*, 1994: 218.

Abia semenoviana Gussakovskij, 1947, Fauna de L'URSS II(2): 111-112; Shinohara, 1990: 116; Kim *et al.*, 1994: 218.

Diagnosis. Abdomen blueish green, inner abdomen area black with emarginated, last tergite yellowish brown. Median and first radial cells hyaline, clypeus truncate. Legs beyond the apex of femora yellow.

Measurement. OOD/MOD: 1.41, POD/OOD: 4.38, MOD/IOD: 0.55, OOD/IOD: 0.77, Body length: 11.2 mm, Fore wing length: 11.1 mm, Hind wing length: 7.8 mm.

Specimens examined. YNU: KW- 1 ♀, Myeongji-road, Mt. Pangdae, 17. VIII. 1995.

Distribution. Korea and East Siberia (Baikal Region).

Genus *Orientabia* Malaise, 1934 번데기잎벌속

Orientabia Malaise, 1934, Ark. Zool. 27A(9): 36. Type species: *Abia egregia* Kuznetsov (Original designation).

***Orientabia coreana* (Takeuchi, 1927) 번데기잎벌**

(Figs 3, 4, 22, 32, 42)

Abia coreana Takeuchi, 1927, Trans. Nat. Hist. Soc. Formosa 17: 382; Takeuchi, 1931: 21.

Orientabia coreana: Semenov-Tian-Shanskij et Gussakovskij, 1937: 1; Takeuchi, 1939: 432; Gussakovskij, 1947: 81, 203; Kim, 1963: 282; Togashi, 1973: 110; Kim *et al.*, 1994: 218; Lee *et al.*, 1995a: 190; 1995b: 290.

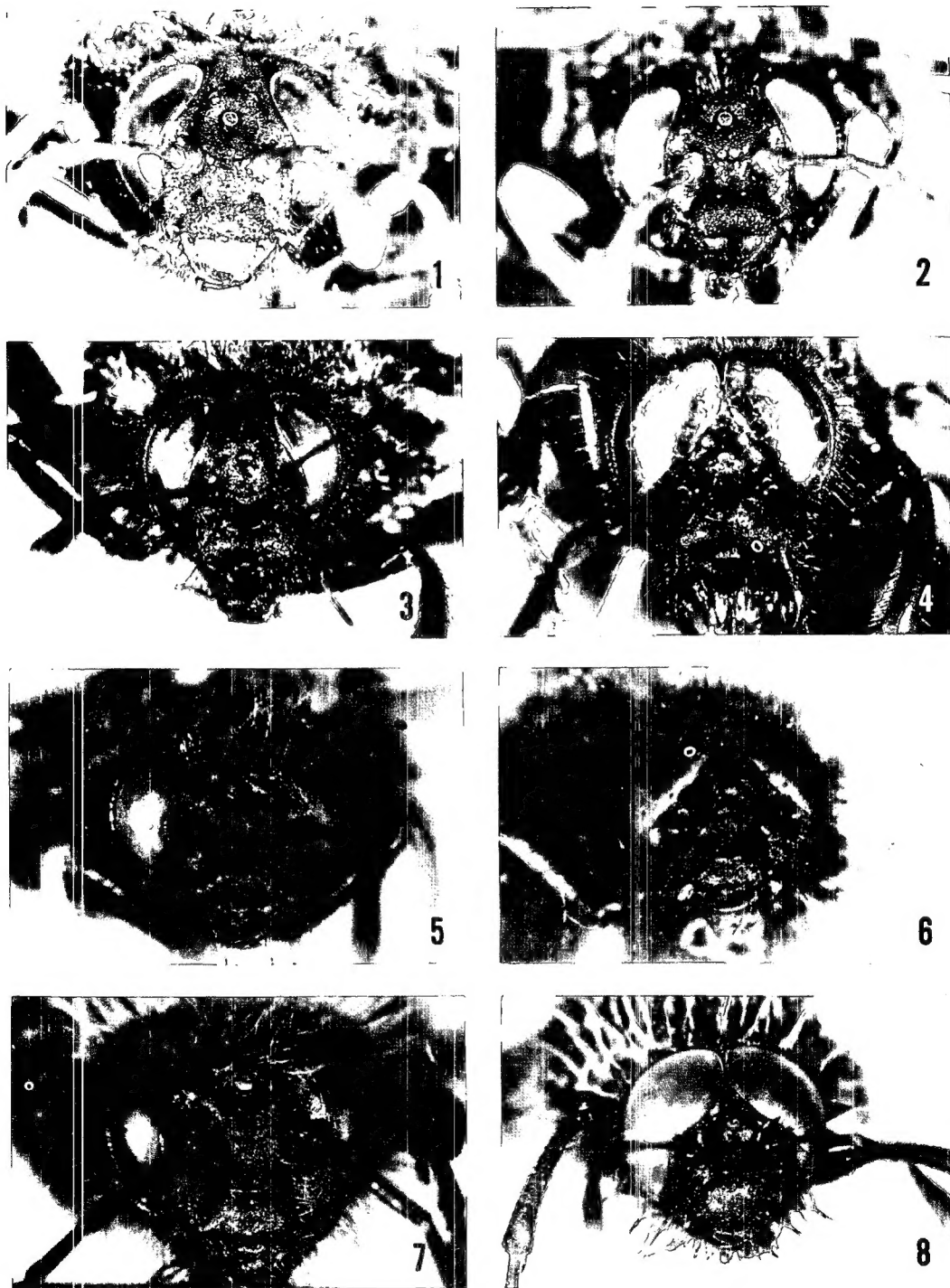
Orientabia pacifica Semenov-Tian-Shanskij et Gussakovskij, 1937, Konowia, 16: 3.

Diagnosis. Body black, almost without metallic lustre. Thorax covered with black hairs. Wings dark yellowish hyaline. Nervulus and bacillus yellow. Legs black, tarsus and spur brown. Tibiae always black.

Measurement. OOD/MOD: 0.79, POD/OOD: 5.22, MOD/IOD: 0.75, OOD/IOD: 0.60, Body length: 14.0 mm, Fore wing length: 14.0 mm, Hind wing length: 9.4 mm.

Specimens examined. YNU: KW- 1 ♂, Yuilsa, Mt. Taebaek, 30. VI. 1991; 1 ♀, Mt. Taebaek, 14. V. 1992 (S.Y. Pae); 1 ♀ (E.M. Park); 14. V. 1994, 1 ♀ (S.M. Ryu); 1 ♀, 13. V. 1991 (K.H. K); 4 ♀, Pinji-dong, Mt. Pangdae, Inje-gun, 25. VI. 1996 (J.W. Lee); 1 ♂, Hanridong, Mt. Pangdae, Inje-gun, 24. VI. 1996 (J.W. Lee); 1 ♂, Misan-ri, Mt. Pangdae, Inje-gun, 25. VI. 1996 (S.M. Ryu); 2 ♂, 3 ♀, 25. VI. (J.W. Lee); 2 ♀, 25. VI. (S.M. Lee); 1 ♀, 25. VI. (J.Y. Cha); 1 ♀, Mt. Chiak, Wonju, 5. VI. 1992 (D.W. Shin); 1 ♀, 5. VI. 1992 (M.J. Yeum); 1 ♀, 5. VI. (K.H. K); 1 ♂, Mt. Surak, 31. V. 1986 (Y.H. Kil); 1 ♀, 11. IV. 1983. (C.G. Im); 1 ♀, Mt. Odae, 22. VI. 1994 (S.P. Cheun); 1 ♀, Hyangnobong, 13. V. 1992; 1 ♀, 2. VII. 1994., 1 ♀, 13. V. 1992 (S.M. Ryu); 1 ♀, 13. V. 1992 (J.Y. Cha); 1 ♀, 16. VI. 1968 (I.J. Kim); 1 ♂, Mt. Kyebang, 21. VII. 1981 (S.H. Nam); 2 ♂, 1 ♀, 21. VII. (M.R. Kim); 1 ♀, 21. VII. (H.Y. Han); 1 ♀, Nochun-ri, Mt. Palkyo, 23. V. 1998 (J.W. Lee); 1 ♀, 23. V. (C.C. Chung); 1 ♀, Mt. Kariwang, 27. V. 1998 (S.M. Ryu); 1 ♂, Mt. Sundal, 27. V. 1998 (S.M. Ryu); 3 ♀, Sangweonsa, Mt. Odae, 27. V. 1998 (Y.T. Chun); 1 ♂, 2 ♀, 27. V. (Y.J. Jang); 1 ♂, 1 ♀, Hoereungbong, Pyeongchang, 22. V. 1998 (S.M. Ryu); KG- 1 ♀, Mt. Cheonma, 18. VI. 1983 (C.G. Lim); 1 ♂, 23. IV 1972 (S.G. Lee); 1 ♂, 23. IV. 1961 (K.S. Kim); 1 ♀, 4. VI. 1983 (J.W. Lee); 1 ♀, 6. VI. 1980 (S.G. Lee); 1 ♀, 6. VI. 1991 (Y.B. Pae); 1 ♀, 6. VI. (J.W. Lee); 1 ♀, 4. VI. 1983, (J.W. Lee); 1 ♀, 18. VI. (M.S. Kim); 1 ♀,

2. VI. 1984 (I.H. Kim); 1 ♂, 7. VI. 1986 (P.C. Sin); 2 ♀, 7. VI. (H.W. To); 1 ♂, 7. VI. (P.C. Yun); 1 ♀, 6. VI. 1990 (J.H. Whang); 1 ♀, 6. VI. (S.K. Lee); 1 ♀, 6. VI. (Y.B. Bae); 1 ♂, 6. VI. 1991 (J.W. Lee); 1 ♀, 6. VI. (J.W. Chei); 1 ♀, 6. VI. (S.D. Y.); 1 ♀, 6. VI. (J.W. Lee); 1 ♀, 1. VI. (Y.H. Park); 1 ♀, 26. VI. 1996 (J.M. Kim); 1 ♂, 3. V. 1978 (S.M. Lee); 1 ♀, 6. VI. 1991 (J.W. Choi); 1 ♂, 29. IV. 1962 (J.R. Jang); 1 ♂, 29. IV. 1962 (B.G. An); 1 ♀, 6. VI. 1990 (J.H. Hwang); 1 ♀, 7. VI. 1980 (H.K. Kim); 2 ♂, 23. IV. 1961 (Y.B. Yu); 1 ♀, 2. V. 1986 (K.J. Yoon); 1 ♀, 7. VI. 1986 (O.Y. Kwon); 1 ♀, 10. V. 1975 (S.I. O); 1 ♀, 23. IV. 1994; 1 ♂, Mt. Tobong, 6. VI. 1961 (W.S. Moon); 1 ♂, Mt. Wangpang, 16. V. 1982 (S.S. Park); 1 ♂, 16. V. (G.S. Nam); 1 ♂, 22. V. 1976 (Y.S. Kim); 1 ♂, 15. VI. 1975 (P.S. Kang); 1 ♀, 15. VI. (S.S. Ko); 1 ♀, 15. VI. (S.H. Yu); 1 ♂, 17. V. 1981 (C.G. Kim); 1 ♀, 5. VI. 1977 (G.O. Lee); Kwangneung, 1 ♂, 19. V. 1974 (C.S. Yu); 1 ♀, 28. V. 1972 (S.W. Kim); 2 ♂, Yangsu-ri, Mt. Ungil, 3. V. 1992 (W. Ko); 2 ♂, Yangju, Mt. Ungil, 17. V. 1992 (H. Namkung); 1 ♂, Mt. Myeongji, 28. V. 1978 (H.B. Kim); 1 ♀, 6. VI. 1976 (S.M. Lee); 1 ♂, Mt. Youngmun, 28. V. 1982 (S.P. Hong); 1 ♀, 28. V. 1982 (H.J. Lee); 2 ♀, 29. V. 1982 (E.S. Park); 1 ♀, 28. V. 1982 (J.H. Chei); 1 ♀, 28. V. 1991 (J.S. Lee); 1 ♀, Mt. Unak, 31. V. 1992 (Y.H. Park); 1 ♀, 1. VI. 1992 (Y.H. Park); 1 ♂, Mt. Cheonggye, 22. IV. 1985 (K.N. Kim); 1 ♀, Mt. Cheonggye, 5. V. 1990 (H.B. Kang); 1 ♀ Aengmubang, Kinggi 9. V. 1976 (S.H. Nam); 1 ♀, 22. V. (Y.T. Chun); 1 ♀, 22. V. (D.K. Chung); 2 ♀, Mt. Jukem, Pocheon, 28. VI. 1998 (J.D. Yeu); CB- 2 ♂, Mt. Worak, 30. V. 1987 (S.M. Ryu); 1 ♀, 30. V. 1987 (D.C. Kim); 1 ♂, Cheondong-ri, Tanyang-gun, 13. V. 1994 (S.M. Ryu); 1 ♀, Mt. Teogyu, 30. V. 1992 (J.W. Park); 1 ♂, Cheong Cheong Sagimak, Koesan, 23. V. 1993 (D.S. Ku); 1 ♀, Chungju, 16. V. 1986 (K.S. Yoon); CN- 1 ♀, Mt. Kyeryong, 10. VII. 1987 (S.M. Ryu); 2 ♀, Muju Kucheon-dong, 11. VI. 1972 (C.W. Kim); 1 ♀, 11. VI. 1972 (J.I. Kim); 1 ♀, 11. VI. 1972 (J.I. Kim); KB- 1 ♀, Yeungnam Univ., Kyongsan-shi, 20. VI. 1993 (H.S. Suh); 1 ♀, 3. VI. 1997 (J.M. Yun); 1 ♀, Mt. Sobaek, 23. V. 1997 (W.D. Lee); 1 ♀, 24. V. 1997 (M.K. Choi); 1 ♂, Birobong, Mt. Sobaek, 12. V. 1994 (H.Y. Park); 1 ♀, 12. V. 1994 (J.I. Kim); 2 ♀, Birokyegok, Mt. Sobaek, 23. V. 1993 (J.W. Lee); 1 ♂, Jukkeyugok, 3. V. 1997 (Y.T. Quan); 1 ♀, Cheondong-ri, Mt. Sobaek, 24. V. 1997 (M.R. Cho); 1 ♀, (T.W. Im); 4 ♀, Cheondongkyegok, Mt. Sobaek, 25. V. 1997 (J.W. Lee); 5 ♀, 23. V. 1997 (J.W. Lee); 1 ♂, 1 ♀, 23. V. (S.H. Park); 2 ♀, Daehyenri, Bongwha, 28. V. 1993 (B.Y. H); 1 ♀, Pulyeongkyegok, Ulchin, 10. V. 1991 (M.S. Song); 1 ♀, 9. V. 1991 (H.K. Kim); KN- 1 ♂, Sajapyeong, Miryang, 22. VI. 1993 (K.H. K.); 1 ♂, Jeyaksan, Miryang, 26. IV. 1997 (J.S. Im); 1 ♂, Pyochungsa, Miryang, 4. V. 1991 (J.S. Park); 1 ♀, Mt. Chii, Chosen, 7. VIII. 1924 (Y. Hasegam); 1 ♀, Sunguryu, Mt. Chiri, 3. VI. 1989 (H.Y. Kim); 1 ♀, Mt. Kaya, 10. V. 1997 (J.M. Yoon); 1 ♀, Okcheonsa, 1. V. 1989 (M.C. Choi). NSMT: 1 ♀, Mirugam (Pugdaesa), 1300 m alt, Mt. Odae, 8. VI. 1987; 1 ♀, 9. VI.; 1 ♀, 18. V. 1989; 1 ♀, 21. V.; 1 ♀, 22. V.; 1 ♀, 23. V.; 1 ♀, 26. V.; 2 ♀, 28. V. 1991; 3 ♀, 29. V.; 6 ♀, 31. V.; 3 ♀, 1. VI.; 2 ♀, 2. VI.; 4 ♀, 3. VI.; 4 ♀, 27. V. 1992; 5 ♀, 29. V.; 1 ♀, 30. V.; 1 ♀, 31. V.; 5 ♀, 26. V. 1993; 4 ♀, 27. V.; 1 ♀, 28. V.; 3 ♀, 30. V.; 4 ♀, 1. VI.; 8 ♀, 29. V. - 1. VI. 1996; 3 ♀, 6. VI.; 3 ♀, 31. V. 1997; 1 ♀, 1. VI.; 6 ♀, 3. VI.; 6 ♀, 6. VI. (A. Shinohara); 1 ♀, Sangweonsa, Mt. Odae, 22. V. 1989; 2 ♀, 27. V.; 2 ♀, 15. V. 1990; 2 ♀, 30. V. 1991 (A. Shinohara); 1 ♂, 1 ♀, Chongpyongsa nr. Chuncheon, 1. VI. 1987; 1 ♀, 23. V. 1992; 1 ♀, Tokchom-Kogae 510 m, nr. Chuncheon, 4. VI. 1991; 2 ♀, Mt. Samag, 9. V. 1990; 1 ♂, Jiamri, 10. V. 1990; 2 ♀, Nogodan 1200 m, Mt. Chiri, 4-5. VI. 1996 (A. Shinohara); 1 ♀, Huibangsa 750 m, Mt. Sobaek, 16. V. 1987; 2 ♀, 17. V.; 3 ♂, 18. V.; 1 ♂, 2 ♀, 19. V.; 2 ♀, 20. V. (A.



Figs 1-8. Frontal view of head: 1. *Abia formosa* Takeuchi, ♀; 2. *A. semenoviana* Gussakovskij, ♀; 3. *Orientabia coreana* (Takeuchi), ♀; 4. *O. coreana* (Takeuchi), ♂; 5. *Zareaa metallica* Mocsáry, ♀; 6. *Z. metallica* Mocsáry, ♂; 7. *Z. fasciata* Linnaeus, ♀; 8. *Z. fasciata* Linnaeus, ♂.

Shinohara); 2 ♀, Popkyesa 1300 m, Mt. Chirisan, 24. V. 1987; 1 ♀, 25. V.; 2 ♀, 27. V.; 3 ♀, 28. V.; 1 ♂, 29. V. (A. Shinohara); 1 ♀, Jungsanri-Popkyesa 800 m, Mt. Chiri, 23. V. 1987 (A. Shinohara); 1 ♀, Sanbo, Chosen, 21. V. 1935 (K. Sato); 3 ♂, 7 ♀, Shuotsu, Korea 16. VII. 1931 (K. Sato); 1 ♂, Kwangneung, 14. V. 1980; 1 ♂, 15. V. (A. & N. Shinohara). AU: CB- 1 ♀, Mt. Worak, 30. IV. (J.S. Han). EWU: CB- 3 ♀, Muju Kucheon-dong, 11. VI. 1972 (J.H. Yu). KU: KG- 2 ♂, Mt. Cheonma, 23. IV. (J.S. Lee). KNU: KG- 1 ♂, Mt. Myeongseong, 16. V. 1982 (Y.J. Kwon); 1 ♂, Kusan, 20. X. 1990 (Y.J. Kwon); KB- 1 ♂, Mt. Palgong, 27. V. 1981 (Y.J. Kwon). KWN: KW- 1 ♀, Baekdamsa, Mt. Seorak, 4. VI. 1979 (B.O. Choi). CU: KG- 1 ♀, Mt. Cheonggye, 2. V. 1989 (Y.S. Y); 1 ♀, 21. IV. 1991 (P.Y. G); 1 ♀, 11. V. 1992 (S.H. Choi). SNU: JN- 3 ♀, Mt. Nogodan 1200 m, Mts. Chiri, 26-28. V. 1997; 2 ♀, 20. VII. 1968 (Seng2). KSNU: KN- 2 ♂, 1 ♀, Mt. Chirisan, 25. VII. 1988 (K.H. K.). NIAST: KG- 11 ♂, 2 ♀, Mt. Chongma, 9. V. 1980 (A. & N. Shinohara and S. J. Yoon Leg.); Pogwangsa, 1 ♀, 26. V. 1978 (J.K. Kim); 2 ♂, 2 ♀, 10. V. 1980 (A. & N. Shinohara). FRI: KG- 1 ♀, Mt. Wangbang, 2. VI. 1985 (J.K. Nam); 1 ♀, Uidong, 6. VI. 1961 (J.K. Yu); 1 ♀, 26. V. (K.S. Yoon); CB- 1 ♀, Cheondong-ri, Tanyang-gun, 13. V. 1994 (J.H. Jang).

Distribution. Korea and Ussuri.

***Orientabia japonica* (Cameron, 1886) 루리번데기잎벌**

Abia japonica Cameron, 1886, Trans. Nat. Hist. Soc. Glasgow 1(2): 269; Dalla Torre, 1898: 499; Nakagawa, 1902: 8; Konow, 1905: 8; Rower, 1910: 118; Takeuchi, 1919: 158, 1931: 21; Doi, 1938: 29.

Abia pilosa Konow, 1905, Wien. Ent. Zeit. 15: 48; Rohwer, 1910: 118; Takeuchi, 1919: 188, 1931: 21.

Abia relativa Rohwer, 1910, Proc. U. S. Nat. Mus. 39: 105; Takeuchi, 1919: 188, 1931: 21.

Abia bantaizana Matsumura, 1918, Thous. Ins. Jap. Suppl. 4: 34; Takeuchi, 1919: 1880; Matsumura, 1930: 69, 1931: 21, 1936: 163.

Orientabia finitima Semenov. et Gussakovskij, 1937, Konowia 16: 2.

Orientabia japonica: Takeuchi, 1939, Tenthredo 2(4): 432; Gussakovskij, 1947: 82, 203; Kim, 1963: 282, 1970: 152-153, 721-722; Okutani, 1967: 48; Togashi, 1973: 110.

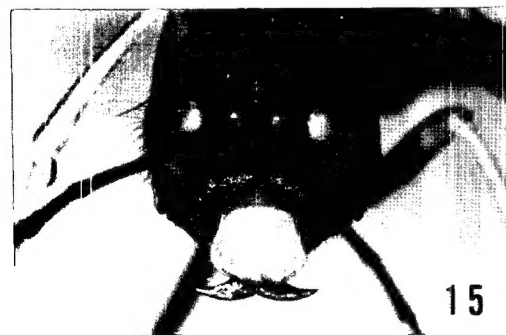
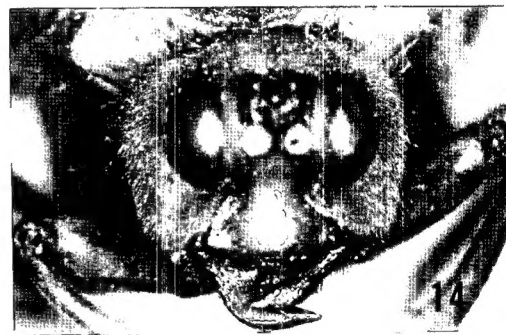
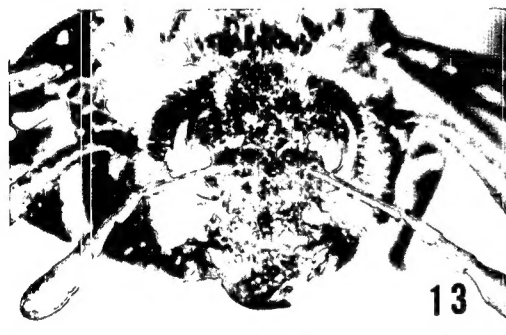
Diagnosis. Body with distinct metallic lustre. Thorax covered with yellowish hairs. Tibiae and tarsi usually white in female and black in male (Takeuchi, 1939).

Distribution. Korea, Japan, and Siberia.

Remarks. This species resembles *A. coreana* but can be easily distinguished from it by using Takeuchi's (1939) key. We could not find any specimens.

Genus *Zaraea* Leach, 1817 금빛수증다리잎벌속

Zaraea Leach, 1817, The Zool. Misc. 3: 113. Type species: *Tenthredo fasciata* Linnaeus.



Figs 9-16. Frontal view of head: 9. *Zarea aurata* Takeuchi, ♀; 10. *Agenocimbex jucunda* (Mocsáry), ♀; 11. *A. eoa* Semenov-Tian-Shanskij, ♀; 12. *Cimbex femorata* (Linnaeus), ♀; 13. *C. femorata uchidai* (Takeuchi), ♀; 14. *C. lutea* (Linnaeus), ♀; 15. *Leptocimbex allantiiformis* (Mocsáry), ♀; 16. *L. gracilentia* (Mocsáry) ♀.

***Zaraea marginata* (Mocsáry, 1909) 테두리금빛수중다리앞벌**

Abia marginata Mocsáry, 1909, Ann. Mus. Nat. Hung. 7: 2.

Zaraea marginata: Gussakovskij, 1947, Fauna de L'URSS, II(2): 94, 209; Togashi, 1973: 110.

Distribution. Korea and Ussuri.

Remarks. This species was recorded by Mocsáry (1909), but has not collected Korean one.

***Zaraea metallica* (Mocsáry, 1909) 금빛수중다리앞벌**

(Figs 5, 6, 33)

Abia metallica Mocsáry, 1909, Ann. Mus. Nat. Hung. 7: 1-2.

Abia lawisii Matsumura, 1918, Thous. Ins. Jap. Suppl. 4: 33; Takeuchi, 1920: 33

Zaraea lewisii var. *matsumurai* Takeuchi, 1931, Trans. kansai Ent. Soc. 2: 23.

Zaraea metallica: Doi, 1938, J. Chosen. Nat. Hist. Soc. 6(24): 35; Takeuchi, 1939: 438; Kim, 1963: 280; Okitani, 1967: 48; Chu, 1969: 301; Ko, 1969: 307; Kim, 1970: 153, 719-720; Kim *et al.*, 1994: 218, 1996: 67.

Zaraea lewisii var. *metallica*: Malaise, 1939, Ent. Tidskr. 9: 20.

Diagnosis. Abdomen black. Middle cell and 1st Rs with dark color spot, 1st discoidal cell and hind wing hyaline. Underside of abdomen yellowish white. Legs black, except basal of femur. Trochanter, tibia and tarsus yellowish white. Metanotum and propodeum of female with white hyaline area.

Measurement. OOD/MOD: 1.10, POD/OOD: 3.80, MOD/IOD: 0.60, OOD/IOD: 0.66, Body length: 9.4 mm, Fore wing length: 9.6 mm, Hind wing length: 6.7 mm.

Specimens examined. YNU: KW- 2♀, Hyeonam, Taebaek-shi, 14. V. 1991 (H.K. Kim); 1♀, 30. V. 1992; 1♀, Sangweonsa, Mt. Odae, 27. V. 1998 (S.M. Ryu); KG- 1♂, Mt. Cheonma, 11. IV. 1971 (S.N. Chei); CB- 1♀, Cheondonggyegok, Mt. Sobaek, 23. V. 1997 (J.W. Lee); KB- 1♀, Pulyeongkyegok, Ulchin, 9. V. 1991 (H.K. Kim); 2♀, Cheoram, 14. V. 1991. NSMT: KW- 1♂, Mirugam (Pugdaesa) 1300 m, Mt. Odae, 23. V. 1989 (A. Shinohara); KB- 1♀, Huibangsa 750 m, Mt. Sobaek, 20. V. 1987 (A. Shinohara).

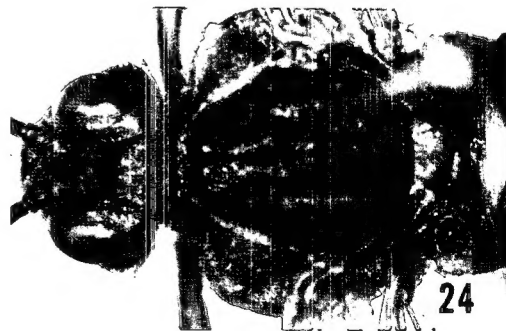
Distribution. Korea, Japan, China, and East Siberia.

***Zaraea aurata* Takeuchi, 1931 꼬마금빛수중다리앞벌 (新稱)**

(Figs 9, 43)

Zaraea aurata Takeuchi, K., 1931, Trans. Kansai ent. Soc. (2): 26; Gussakovskij, 1947: 101.

Diagnosis. ♀: Head with irregular punctation. Vertex with slender, distinct median furrow, with densely large, irregular punctation. Ocellar furrow distinct; surrounding of median ocelli narrow, vague than that of male. Clypeus prominent, posterior and anterior margin of clypeus rectilinear. Pronotum with



Figs 17-20. Frontal view of head: 17. *Palaeocimbex carinulata* (Konow), ♀; 18. *Pseudoclavellaria amerinae* (Linnaeus), ♀; 19. *Trichosoma sachalinense* Matsumura, ♂; 20. *T. vitellinae* Linnaeus, ♂; **Figs 21-24.** Dorsal views of frons and thorax: 21. *Abia formosa* Takeuchi, ♀; 22. *Orientabia coreana* (Takeuchi), ♀; 23. *Zarea fasciata* Linnaeus, ♀; 24. *Agencimbex eoa* Semenov-Tian-Shanskij, ♀.

large, irregular punctation. Body yellowish black, with yellow hairs; head with black hairs. Head black with yellowish polish; ocellus red; occiput, vertex and surrounding ocellus with yellow hairs. Antennae dark brown. Fore wings partially dark brown except 1st discoidal cell.

♂: Antennae black, apical part blackish brown. Compound eye nearly closed to postocellus.

Measurement. OOD/MOD: 1.13, POD/OOD: 3.71, MOD/IOD: 0.61, OOD/IOD: 0.69, Body length: 1.10 mm, Fore wing length: 1.1 mm, Hind wing length: 7.1 mm.

Specimens examined. YNU: KG- 1 ♀, Mt. Cheonma, 11. IV. 1971 (S.H. Lee); 1 ♂, Pogqangsa, 12. IV. 1981 (B.Y. Lee). NSMT: KW- 1 ♀, Mirugam (Pugdaesa) 1300 m, Mt. Odae, 19. V. 1989 (A. Shinohara); KG- 1 ♂, Suigen, 14. IV. 1923, 2 ♂ (K. Sato), 9. IX. 1923. KU: CJ- 1 ♀, Yongjingak, 5. VI. 1968.

Distribution. Korea and Japan.

Remark. This species is recorded for the first time from Korea.

***Zaraea fasciata* (Linnaeus, 1758) 삼각금빛수중다리잎벌 (新稱)**

(Figs 7, 8, 23)

Tenthredo fasciata Linnaeus, 1758, Syst. Nat. 1: 555.

Abia fasciata: Enslin, 1917, Beiheft d. Entom. Zeischr. 10: 582.

Zaraea fasciata: Takeuchi, 1939, Tenthredo 2(4): 439.

Diagnosis. ♀: Head with densely large punctation. Vertex with densely large punctation, exist obscure median furrow. The postocular area, clypeus, labium and surrounding mandible densely covered with black hairs. Mesothorax with closely large and distinct punctation; pleural with yellowish white long hairs, with sparsely large punctation on rough surface. Body black, with white or yellowish white long hairs. Head black, metallic polish, with white long hairs and black short hairs. Ocellus yellow or red, clypeus and labium black; teeth of mandible polished red brown. Antennae black; fifth and sixth joint red brown. Thorax and basal part of propodeum black; metathorax and propodeum yellowish white.

♂: Club of antenna yellowish white; abdomen black; propodeum blue black. Scutellum heart shape, with long black hairs on lateral margin. Propodeum polish, sparsely punctation. Abdominal tergite with sparsely short hairs and surface covered with small granule. Tibia dark yellow; tarsus yellow.

Measurement. OOD/MOD: 1.45, POD/OOD: 2.91, MOD/IOD: 0.52, OOD/IOD: 0.74, Body length: 1.2 mm, Fore wing length: 1.1 mm, Hind wing length: 7.8 mm.

Specimens examined. YNU: CB- 1 ♂, Cheondong-ri, Danyang, 21. V. 1984 (H.Y. Park); KB- 1 ♂, Mt. Palgong, 26. VI. 1994 (S.Y. Shin); 1 ♂, 26. VI. (S.R. Sin); 1 ♂, Koryung, 21. VI. 1984 (T.S. Kim); 1 ♂, Birobong, Mt. Sobaek, 12. V. 1994 (S.M. Ryu); KN- 1 ♂, Nogodan, Mt. Chiri, 28. V. 1997 (S.W. Park). NSMT: KW- 1 ♀, Sangweonsa, Mt. Odae, 20. V. 1989 (A. Shinohara); 1 ♀, Mirugam (Pugdaesa) 1300 m, Mt. Odae, 21. V. 1989; 1 ♀, 30. V. 1991; 1 ♀, 1. VI. 1993; 2 ♀, 29. V.- 1. VI. 1996; 3 ♀, 1. VI. 1997; 1 ♀, 3. VI.; 2 ♀, 6. VI.; 1 ♀, Chin-kogae 850 m, 2. VI. 1992 (A. Shinohara); 3 ♂, Mt. Samagsan, 9. V. 1990 (A. Shinohara); KG- 1 ♀, Mt. Cheonmasan, 9. V. 1980 (A. & N. Shinohara and S.J. Yoon leg.). SNU: KW- 1 ♀, Pugdaesa, Mt. Odaesan, 4. VI. 1996 (J.W. Kim).

Distribution. Korea and Japan.

Remark. This species is recorded for the first time from Korea.

Subfamily Cimbicinae 수중다리잎벌아과

Genus *Agenocimbex* Rohwer, 1910 무늬수중다리잎벌

Agenocimbex Rohwer, 1910, Proceeding U. S. National Museum 39 (1777): 104. Type species: *Cimbex maculata* Marlatt (Designated by Takeuchi, 1919).

***Agenocimbex jucunda* (Mocsáry, 1896) 무늬수중다리잎벌** (Figs 10, 34, 44)

Cimbex jucunda Mocsáry, 1896, Termesz. Füzet. 19: 1; Konow, 1899: 87, 1905: 4.

Cimbex maculata Marlatt, 1898, Proc. U. S. Nat. Mus. 21: 498; Matsumura, 1912. 4: 28.

Agenocimbex maculata: Rohwer, 1910, Proc. U. S. Nat. Mus. 39: 104.

Agenocimbex jucunda: Takeuchi, 1919, Ins. Mats. 2: 126; Matsumura, 1930: 65, 1931: 81; Takeuchi, 1931: 19.

Diagnosis. Furrow of mesonotum deep. Wings yellowish hyaline and stigma dark brown. Propodeum yellow or yellowish white and covered with yellowish white hairs. Abdomen yellow with yellowish hairs. Each abdomen except the last tergite with black spots. Legs bright blue black; tarsus often dark brown.

Measurement. OOD/MOD: 1.71, POD/OOD: 1.07, MOD/IOD: 0.52, OOD/IOD: 0.88, Body length: 1.6 mm, Fore wing length: 1.7 mm, Hind wing length: 1.1 mm.

Specimens examined. YNU: CN- 1♀, Tonghaksa, Mt. Kyeryong, 7. VI. 1974 (T.W. Chung); 1♀, Kapsa, 26. V. (T.W. Chung); KB- 1♀, Yeungnam Univ., Kyeongsan-shi, 11. V. 1996 (J.B. Park); JN- 1♀, Cheoneumsa, Mt. Chiri, 6. V. 1977 (S.W. Park); 1♀, 6. V. (E.S. Oh).

Distribution. Korea and Japan.

***Agenocimbex eoa* Semenov-Tian-Shanskij, 1935 흑무늬수중다리잎벌 (新稱)** (Figs 11, 24, 35, 51)

Agenocimbex eoa Semenov-Tian-Shanskij, 1935, Notulae Entom. 15: 9.

Agenocimbex esakii Takeuchi, 1939, Tenthredo 2(4): 428-429.

Diagnosis. Body with yellow hairs; head yellow. Ocellar area with black E shape. Clypeus with yellow hairs; labium yellow. Antennae yellowish green except club joint; club joint yellowish brown. Thorax with yellow hairs; pronotum anterior margin black, other margin yellow. Mesonotum black. Fore wing anterior area yellowish brown, posterior area yellow. Hind wing transparent, vein and pterostigma yellowish brown. Lateral of sixth to eighth tergite dark yellow.

Measurement. OOD/MOD: 2.14, POD/OOD: 1.33, MOD/IOD: 0.62, OOD/IOD: 1.33, Body length: 1.8 mm, Fore wing length: 1.9 mm, Hind wing length: 1.2 mm.

Specimens examined. YNU: KB- 1 ♀, Yeungnam Univ., Kyeongsan-shi, 11. VI. 1993 (H.S. Yoon). SNU: KG- 1 ♀, Whasueong, 24. VI. 1992 (H.J. Lee).

Distribution. Korea and Japan.

Remark. This species is recorded for the first time from Korea.

Genus *Cimbex* Oliver, 1762 수중다리잎벌속

Crabro Geoffroy, 1762, Durand, Paris 2: 261. Type species: *Crabro humeralis* Fourcroy (Designated by Bradley, 1919).

Clavellarius Oliver, 1789, Dictionnaire des Insectes. Pankouke, Paris 4: 22. Type species: *Tenthredo lutea* Linnaeus (Designated by Latreille, 1810).

Cimbex Olivier, 1790, Encyl. Méth. Ins. 5: 762. (New name for *Clavellarius* Oliver). Type species: *Tenthredo lutea* Linnaeus (Designated by Latreille, 1810).

Clavellaria Lamarck, 1801, Deterville, Paris 8 & 432 pp.: 264. (Emendation of *Clavellarius* Olivier).

Neocimbex Malaise, 1937, Ent. News, xlviii: 134. Type species: *Tenthredo (Cimbex) lutea* Linnaeus (Original designation).

***Cimbex femorata femorata* (Linnaeus, 1758) 수중다리잎벌**

(Figs 12, 25)

Tenthredo femorata Linnaeus, 1758, Sys. Nat. 1: 555.

Tenthredo tristis Fabricius, 1779, Reise Norwegen, p. 334.

Crabro lunulatus Geoffroy, 1785, Fourcroy, Ent. Paris 2: 362.

Cimbex europaea Leach, 1817, Zool. Misc. 3: 105, 334.

Cimbex betulae var. *nigra* Zaddach, 1863, Schrift. Ges. Königsberg 3: 250.

Cimbex lutea, Thomson, 1871, Hym. Scand. 1: 19.

Cimbex tonnaichana Matsumura, 1911, Jour. Coll. Agr. Tohoku Imp. Univ. 4: 86.

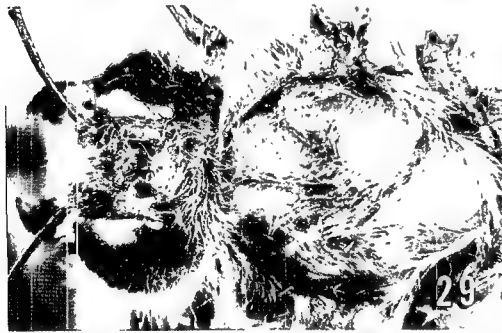
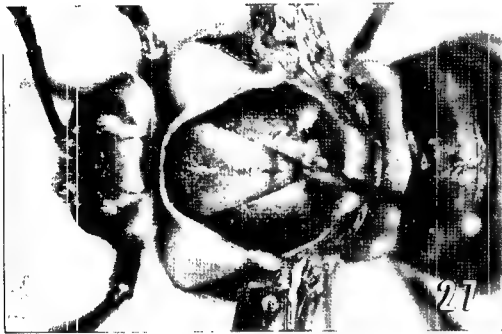
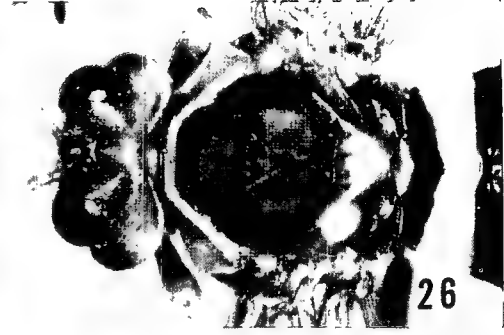
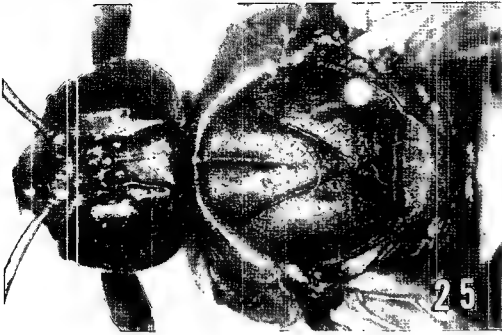
Cimbex femorata: Takeuchi, 1936, Tenthredo 1(1): 66; Doi, 1938: 30; Takeuchi, 1939: 426; Kim, 1963: 281, 1970: 150, 720, 1980: 16.

Diagnosis. Body of female black. Abdomen and propodeum black; third to fifth tergite blackish red and posterior slender yellowish brown. Margin of forth and fifth tergite with yellowish brown.

Measurement. OOD/MOD: 2.10, POD/OOD: 2.54, MOD/IOD: 0.46, OOD/IOD: 0.97, Body length: 2.5 mm, Fore wing length: 2.7 mm, Hind wing length: 1.7 mm.

Specimens examined. SNU: KG- 1 ♂, Suwon, 15. V. 1962 (Baek); 1 ♂, Yangji, 13. V. 1956 (Lee); 1 ♀, Cheongpyeong, 10. VI. 1987 (S.S. Park).

Distribution. Korea, Japan, Saghalien, Siberia, and Europe.



Figs 25-30. Dorsal views of frons and thorax: 25. *Cimex femorata* (Linnaeus), ♀; 26. *Leptocimbex allantiformis* (Mocsáry), ♀; 27. *Palaeocimbex carinulata* (Konow), ♀; 28. *Pseudoclavellaria amerinae* (Linnaeus), ♀; 29. *Trichiosoma opaca* Konow, ♀; 30. *Praia ussuriensis* Malaise, ♀; **Figs 31-32.** Dorsal view of abdomen: 31. *Abia semenoviana* Gussakovskij, ♀; 32. *Orientabia coreana* (Takeuchi), ♀.

***Cimbex femorata uchidai* Takeuchi, 1931** 우치다수중다리잎벌
(Figs 13, 56)

Cimbex femorata var. *ornata* Uchida, 1928, Ins. Mats. 2: 159.

Crabro uchidai Takeuchi, 1931, Trans. Kansai Ent. Soc. 2: 19.

Crabro femorata var. *varians* Takeuchi, 1931, Trans. Kansai Ent. Soc. 2: 18.

Cimbex femorata var. *uchidai*: Takeuchi, 1939, Tenthredo 2(4): 427; Togashi, 1973: 109.

Diagnosis. Body of female black. Propodeum covered a little yellow and black hairs. First and second abdomen tergite black, each suture black, beneath margin of third to sixth tergite black brown and the other red yellow. Above margin of third tergite black with long upset triangular form.

Measurement. OOD/MOD: 1.86, POD/OOD: 2.59, MOD/IOD: 0.54, OOD/IOD: 1.00, Body length: 2.2 mm, Fore wing length: 2.2 mm, Hind wing length: 1.3 mm.

Specimens examined. YNU: KW- 1 ♂, Mt. Seorak, 1. VII. 1984. NSMT: KW- 1 ♂, Mt. Karisan, 25. V. 1961. KW- 1 ♀, Mirugam (Pugdaesa) 1300 m, Mt. Odae, 30. V. 1993 (A. Shinohara); SNU: KG- 1 ♂, Cheongpyeong, 3. VI. 1989 (H.W. Kweun).

Distribution. Korea, Japan, and Saghalin.

***Cimbex lutea* (Linnaeus, 1761)** 노랑수중다리잎벌
(Figs 14, 36)

Tenthredo lutea Linnaeus, 1761, Fauna Suec.: 388.

Cimbex annulata Leach, 1817, Zool. Misc. 3: 107.

Cimbex griffini Leach, 1817, Zool. Misc. 3: 107.

Cimbex lutea: Fallén, 1829, Monographia Tenthredinetrum Sueciae: 6.; Konow, 1897: 107; Schulze, 1914: 86; Enslin, 1917: 572; Takeuchi, 1936: 66, 1939: 424; Berland, 1947: 415; Gussakovskij, 1947: 22, 180; Kim, 1963: 281, 1970: 150, 721, 1980: 15; Chu, 1969: 297; Ko, 1969: 306; Togashi, 1973: 109.

Cimbex salicis albae Zaddach, 1863, Schrift. Ges. Königsberg 3: 238.

Cimbex salicis capreae Zaddach, 1863, Schrift. Ges. Königsberg 3: 238.

Cimbex brevispina Thomson, 1871, Hym. Scand. 1: 21.

Cimbex capreae: Konow, 1897, Wien. Ent. Zeit. 16: 108.

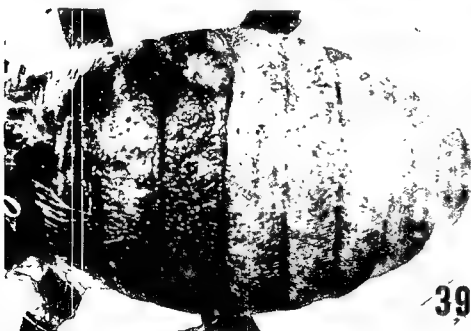
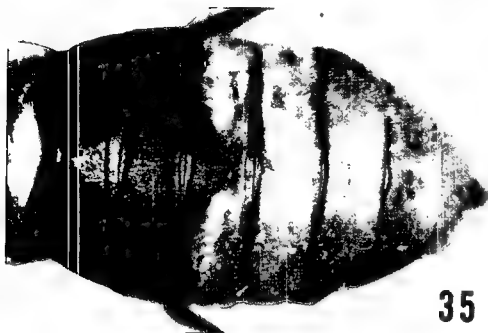
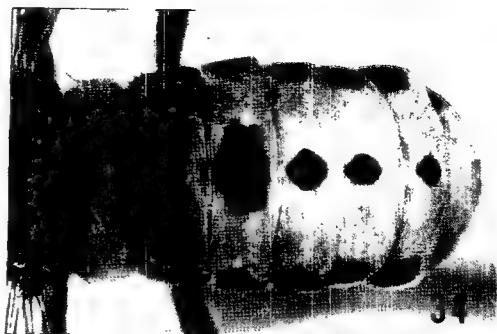
Cimbex femorata var. *coreana* Uchida, 1928, Ins. Mats. 2: 160.

Cimbex auadrimaculata var. *sachalinensis* Uchida, 1928, Ins. Mats. 2: 161.

Cimbex luteus: Okutani, 1967, Jap. J. Appl. Ent. Zool. 11: 47, 1970: 27; Doi, 1938: 30.

Diagnosis. Body of female yellow. Basal part of third to fifth tergite blackish brown and divided by deep furrow. Wings clearly hyaline. Pronotum black, at most narrow posterior margin yellowish.

Measurement. OOD/MOD: 1.84, POD/OOD: 2.89, MOD/IOD: 0.53, OOD/IOD: 0.96, Body length: 24.1 mm, Fore wing length: 26.6 mm, Hind wing length: 16.5 mm.



Figs 33-40. Dorsal view of abdomen: 33. *Zareaa metallica* Mocsáry, ♀; 34. *Agenocimbex jucunda* (Mocsáry) ♀; 35. *A. eoa* Semenov-Tian-Shanskij, ♀; 36. *Cimbex lutea* (Linnaeus), ♀; 37. *Leptocimbex allantiformis* (Mocsáry), ♀; 38. *Pseudoclavellaria amerinae* (Linnaeus), ♀; 39. *Trichiosoma sachalinense* Matsumura, ♀; 40. *Praia ussuriensis* Malaise, ♀.

Specimens examined. YNU: KW- 1 ♀, Taebaek-shi, Cheoram, 14. V. 1991 (H.K. Kim); 1 ♀, Sanbonghyuyangrim, Hongcheon, 10. VI. 1995 (J.I. Kim); KG- 1 ♀, Mt. Cheonma, 30. IV. 1972 (J.I. Kim); 1 ♀, 10. IV. 1972 (W.S. Chei); 1 ♀, 15. V. 1985 (J.H. Hwang); 1 ♀, Kasin-ri, 5. V. 1976 (D.K. Yoon); 1 ♀, Mt. Kwanak, 16. V. 1986 (Y.B. Han); KB- 1 ♀, Cheongsong, Mt. Jhuwang, 15. V. 1987 (J.W. Lee); 1 ♀, Pulyeongkyegok, Ulchin, 10. V. 1991 (H.K. Kim); JN- 1 ♀, Ssanggyesa, Mt. Chiri, 4. V. 1984 (J.H. Ko); 1 ♀, Pandang, 14. V. 1961 (B.W. Chun). KU: 1 ♀, Kwangneung, 12. V. 1957 (K.J. Park); 1 ♀, 13. V. 1962 (M.B. Yu); 1 ♂, VIII. 1958; 1 ♀, 20. V. 1960 (C.W. Kim).

Distribution. Korea, Japan, Saghalien, Siberia, and Europe.

***Cimbex taukushi* Marlatt, 1898** 타우쿠시수중다리잎벌

(Fig. 45)

Cimbex taukushi Marlatt, 1898, Proc. U. S. Nat. Mus. 21: 497; Konow, 1905: 49; Nakagawa, 1899: 200, 1902: 9; Rohwer, 1910: 118; Matsumura, 1915: 258, 1918: 26; Takeuchi, 1919: 187; Uchida, 1928: 162; Kim, 1963: 281, 1970: 151, 721, 1980: 16; Ko, 1969: 306.

Diagnosis. Body of female yellow. Scutellum almost opaque, covered with dense hairs. Posterior margin of the last tergite only shallowly and broadly emarginate. Nervulus and bacillus black; stigma black.

Measurement. OOD/MOD: 2.09, POD/OOD: 2.19, MOD/IOD: 0.50, OOD/IOD: 1.04, Body length: 20.7 mm, Fore wing length: 22.2 mm, Hind wing length: 13.7 mm.

Specimens examined. YNU: KW- 1 ♂, Naei-ri, 5. V. 1969 (C.S. Park); 1 ♂, Mt. Kari, 25. V. 1961 (J.G. Yu); KG- 1 ♂, Mt. Cheonmasan, 4. V. 1981 (Y.U. Lee); 1 ♂, 30. IV. 1972 (J.I. Kim); 1 ♂, 30. IV. (J.H. Yu); 1 ♂, 30. IV.; 1 ♂, Pocheon, 22. IV. 1975 (S.I. Kang); 1 ♂, Kangnam, Mt. Cheonggyesan, 24. V. 1990 (J.I. Lee); Mt. Bukan 6. V. 1987 (K.J. Lee); KW- 1 ♂, Pyeongtaek, 5. V. 1967 (H.M. Kim); 5. V. 1967, (Y.H. Lee); <KG> Kwangreung, 1 ♂, 26. IV. 1964 (J.Y. Oh); 1 ♂, 14. V. 1972 (H.B. Bang); 1 ♂, Cheongneung, 25. V. 1957 (J.H. Lee); KB- 1 ♂, Naenam-myeon Nogok-ri, Kyeongju-gun, 29. IV. 1994 (Y.S. Chung); 1 ♂, 29. IV. (J.Y. Ryu); 1 ♂, 29. IV. (S.W. Chei); 1 ♂, 29. IV. (J.H. Kim); 1 ♂, Pulyeongkyegok, Ulchin, 10. V. 1991 (J.H. Chang); 1 ♂, 1 ♀ (H.K. Kim); 1 ♂, 10. V. (H.K. Kim). KU: KG- 1 ♂, Aengmubong, 9. V. 1971 (J.I. Kim). FRI: Seoul- 1 ♂, Kangnam, Mt. Cheonggyesan, 24. V. 1986 (Y.J. Park); 1 ♂, 1. VI. 1992 (J.M. Min).

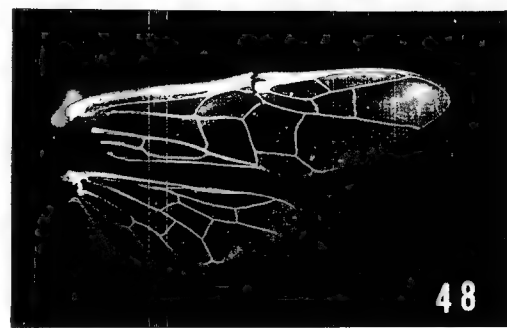
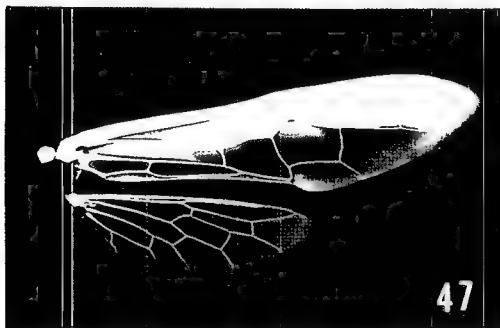
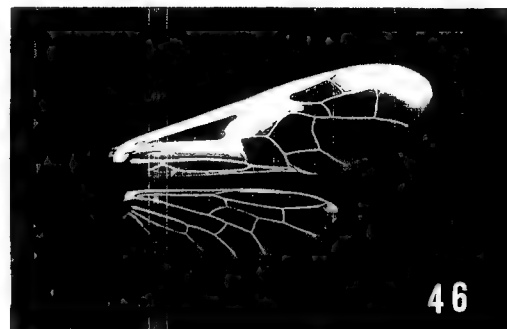
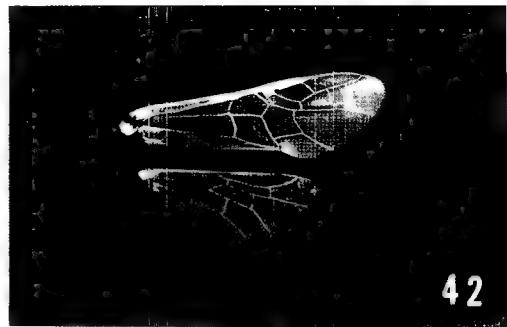
Distribution. Korea and Japan.

Genus *Leptocimbex* Semenov-Tian-Shanskij, 1896 황줄박이수중다리잎벌속

Leptocimbex Semenow-Tian-Shanskij, 1896, Ann. Mus. Zool. St. Petersburg 1: 95. Type species: *Leptocimbex potanini* Semenow.

Euclavellaria Enslin, 1911, Ein Beitrag zur Tenthrediden-Fauna Formosas. Soc. ent. 25: 93. Type species: *Clavellaria formosana* Enslin (Original designation).

Cimbicisoma Rohwer, 1915, Descriptions of new species of Hymenoptera. Proceedings of the United States National Museum 49: 215. Type species: *Cimbicisoma dendrobii* Rohwer (Original designation).



Figs 41-48. Wings: 41. *Abia formosa* Takeuchi, ♀; 42. *Orientabia coreana* (Takeuchi), ♀; 43. *Zareae aurata* Takeuchi, ♀; 44. *Agenocimbex jucunda* (Mocsáry), ♀; 45. *Cimbex taukushi* Marlatt, ♀; 46. *Leptocimbex allantiformis* (Mocsáry), ♀; 47. *Palaeocimbex carinulata* (Konow), ♀; 48. *Pseudoclavellaria amerinae* (Linnaeus), ♀.

tion).

Okamotoionus Sato, 1928, The *Chalastogastra* of Korea (1). *Insecta Matsumurana* 2: 188. Type species: *Okamotoionus kurisuei* Sato (Original designation).

***Leptocimbex allantiformis* (Mocsáry, 1909) 황줄박이수중다리잎벌**

(Figs 15, 26, 37, 46)

Clavellaria allantiformis Mocsáry, 1909, *Ann. Mus. Nat. Hung.* 7: 1.

Leptocimbex petri-magni Malaise, 1931, *Ent. Tidskr.* 2: 155.

Leptocimbex allantiformis: Takeuchi, 1939, *Tenthredo* 2(4): 421; Kim, 1963: 281, 1970: 721; Chu, 1969: 297.

Diagnosis. Mandible black, except dark brown end part. Costal and subcostal vein of forewings yellow. Submedian cell and 1st discoidal cell dark brown; middle cell and 1st radial cell bright yellow. Abdomen black; margin of second to eight tergites bright yellow.

Measurement. OOD/MOD: 2.00, POD/OOD: 1.54, MOD/IOD: 0.90, OOD/IOD: 1.80, Body length: 13.6 mm, Fore wing length: 15.5 mm, Hind wing length: 10.1 mm.

Specimens examined. YNU: KW- 1 ♂, 1 ♀, Mt. Taebaek, 23. VII. 1986 (J.I. Kim); 1 ♀, 23. VII. (K.S. Jang); 1 ♂, Duta-yeon, 30. V. 1992 (J.W. Lee); 1 ♀, Mt. Kyebang, 21. VII. 1981 (M.R. Kim); 3 ♀, Sangweonsa, Mt. Odae, 27. V. 1998. (C.C. Chung); 1 ♀, 27. V. (Y.T. Chun); 1 ♀, 27. V. (C.H. Lee); KG- 1 ♂, Mt. Cheonma, 1. VI. 1990 (H.O. Kang). SNU: KG- 1 ♀, Mt. Dobong, 23. VI. 1992 (R.C. K.).

Distribution. Korea and East Siberia.

***Leptocimbex gracilenta* (Mocsáry, 1904) 호리수중다리잎벌**

(Figs 16, 52)

Clavellaria gracilenta Mocsáry, 1904, *Zeits. Hym. U. Dipt.* 4: 351.

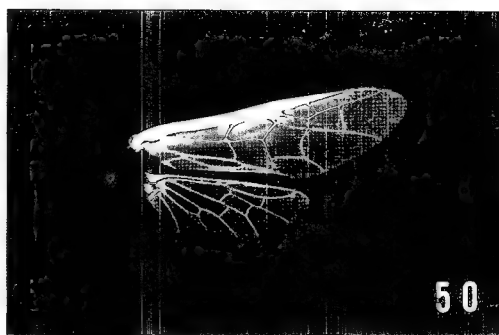
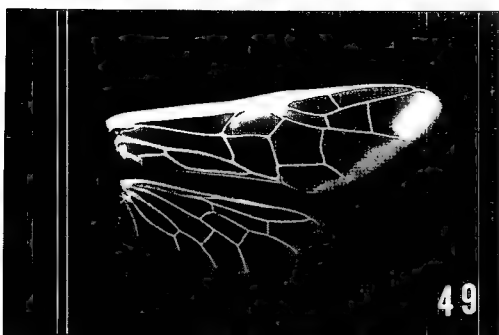
Okomotonius kurisuei Sato, 1928, *Ins. Mats.* 2: 180.

Leptocimbex gracilenta: Takeuchi, 1939, *Tenthredo* 2(4): 422; Kim, 1963: 281; 1970: 151, 721; Shinohara et Smith, 1979: 286.

Diagnosis. Basal part of mandible bright yellow and inner margin hyaline red. Anterior half of fore wings distinct dark yellow; hindwings hyaline. Propodeum bright yellow, basal area black. Abdomen blackish brown. Second tergite black, and postreior margin brown.

Measurement. OOD/MOD: 2.32, POD/OOD: 1.49, MOD/IOD: 1.05, OOD/IOD: 2.48, Body length: 16.4 mm, Fore wing length: 17.4 mm, Hind wing length: 11.5 mm.

Specimens examined. YNU: KW- 1 ♂, Taebaek, 23. VII. 1986 (J.I. Kim); Seoul- 1 ♀, Kwanak-gu, Mt. Kwanak, 6. VI. 1983 (Y.M. Kwon); KG- 1 ♀, Koyang-gun, 25. V. 1975 (B.W. Oh); 1 ♀, Mt. Cheonma, 18. VI. 1983 (M.K. Chei); 1 ♂, 1. VI. 1990 (H.O. Kang); CB- 1 ♂, Hyibangsa, 6. VI. 1981



Figs 49-50. Wings: 49. *Trichiosoma vitellinae* Linnaeus, ♀; 50. *Praia ussuriensis* Malaise, ♀; **Figs 51-54.** Antenna: 51. *Agenocimbex eoa* Semenov-Tian-Shanskij, ♀; 52. *Leptocimbex gracilentia* (Mocsáry), ♀; 53. *Trichiosoma opaca* Konow, ♀; 54. *Praia ussuriensis* Malaise, ♀; **Figs 55-56.** Hind tarsal claw: 55. *Abia formosa* Takeuchi, ♀; 56. *Cimbex femorata uchidai* (Takeuchi), ♀.

(S.H. Kim); JN- 1 ♀, Piagol, Mt. Chiri, 18. VI. 1982 (M.L. Kim). KU: KG- 1 ♂, Namhansanseong, 5. VI. 1983 (D.S. Gong).

Distribution. Korea, China, and Siberia.

Genus *Palaeocimbex* Semenov-Tian-Shanskij, 1935 배수중다리잎벌속

Palaeocimbex Semenow-Tian-Shanskij, 1935, Notul. Ent. 15: 8. Type species: *Cimbex carinulata* Konow (Designated by Gussakovskij, 1947).

***Palaeocimbex carinulata* (Konow, 1897)** 배수중다리잎벌

(Figs 17, 27, 47)

Cimbex carinulata Konow, 1897, Wien. Ent. Zeit. 16: 106; Konow, 1905: 48; Takeuchi, 1919: 187, 1939: 424; Uchida, 1928: 160; Matsumura, 1931: 82; Doi, 1983: 30; Cho, 1955: 173; Kim, 1963: 281, 1970: 151, 1980: 17; Chu, 1969: 297.

Cimbex nomurae Marlatt, 1898, Proc. U. S. Nat. Mus. 21: 496; Nakagawa, 1899: 200, 1902: 9; Rohwer, 1910: 118.

Cimbex suzukii Matsumura, 1912, Thous. Ins. Jap. Suppl. 4: 27.

Crabro carinulatus: Takeuchi, 1931, Trans. Kansai Ent. Soc. 2: 16.

Palaeocimbex carinulata: Ko, 1969, List For. Ins. Pests Kor.: 306; Kim, 1970: 153, 720; Togashi, 1973: 110.

Diagnosis. Body yellowish brown, covered with dark grayish hairs. Clypeus yellow with dark brown laterally. Legs yellowish brown; the middle and posterior legs except tibia and tarsi, underside fuscous, coarsely punctuated.

Measurement. OOD/MOD: 2.07, POD/OOD: 1.63, MOD/IOD: 0.59, OOD/IOD: 1.17, Body length: 19.1 mm, Fore wing length: 20.5 mm, Hind wing length: 11.8 mm.

Specimens examined. YNU: Seoul- 1 ♀, Heoninneung, Kangnam, 21. IV. 1984 (S.L. Yang); 1 ♀, KG- Kwangneung, 6. V. 1958; 1 ♀, 30. IV. 1960 (Y.B. Yu); 1 ♀, 16. V. 1956; 1 ♂, Mt. Cheonma, 21. IV. 1963 (J.S. Park); 1 ♂, 23. IV. 1961 (Y.S. Sim); 1 ♂, 7. V. 1961 (J.S. Park); 1 ♀, 16. IV. 1977 (H.Y. Moon); 1 ♀, Aengmubong, 9. V. 1971 (K.S. Park); 1 ♂, Mt. Cheonggye, 19. IV. 1986 (Y.B. Han); KB- 1 ♂, Yeoncheon, 13. V. 1981 (M.H. Suh); CB- 1 ♂, 1 ♀, Mt. Daedun, 26. VI. 1983 (O. Jun); KN- 1 ♂, Sajapyeong, Miryang, 5. V. 1992 (S.M. Ryu). SNU: KG- 1 ♀, Anyang, 22. V. 1990 (L.T. Kim); 1 ♂, Mt. Pukhan, 21. VI. 1992 (R.C. K.).

Distribution. Korea, Japan, and Ussuri.

Genus *Pseudoclavellaria* Schultz, 1789 버들수중다리잎벌속

Clavellarius Olivier (nec Lamarck), 1789, Encycl. Method. 4: 22. Type species: No species.

Pseudoclavellaria Schultz, 1906, Spolia Hym.: 87. Type species: *Tenthredo amerinae* Linnaeus (by

susequent designation of Rohwer, 1911).

***Pseudoclavellaria amerinae* (Linnaeus, 1758) 버들수중다리잎벌**
(Figs 18, 28, 38, 48)

Tenthredo amerinae Linnaeus, 1758, Syst. Nat. 1: 555.

Tenthredo marginata Linnaeus, 1767, Syst. Nat. p. 920.

Tenthredo quadrafasciata De-Geer, 1773, Mém. Hist. Ins. 3: 598.

Tenthredo rufa Retzius, 1783, Gen. Sped. lus. p. 71.

Clavellaria amerinae: Radoszkowski, 1890, Horae Soc. Ent. Ross. 24: 232.

Cimbex saliceti Sasaki, 1902, Nippon Zyumoka Gaityuhen 2: 178.

Trichiosoma albopilosum Matsumura, 1912, Thous. Ins. Jap. Suppl. 4: 31.

Tenthredo nitobei Matsumura, 1912, Thous. Ins. Jap. Suppl. 4: 32.

Pseudoclavellaria albopilosum: Doi, 1938, J. Chosen Nat. Hist. Soc. 6(24): 32; Chu, 1969: 300.

Pseudoclavellaria amerinae: Takeuchi, 1939, Tenthredo 2(4): 420; Cho, 1961: 274; Kim, 1963: 282; 1970: 154, 722; 1980: 18; Ko, 1969: 307; Zombori, 1971: 240; Togashi, 1973: 110[*amerina*]; Kim *et al.*, 1974: 231; 1994: 219.

Diagnosis. Body black. Head and thorax covered with long grayish hairs. Clypeus and labrum pale yellow, shining, impunctured. Wings subhyaline, with some yellowish shade. Legs black, trochanter, tibiae and tarsi yellow.

Measurement. OOD/MOD: 2.66, POD/OOD: 1.59, MOD/IOD: 0.49, OOD/IOD: 1.31, Body length: 18.5 mm, Fore wing length: 18.8 mm, Hind wing length: 11.5 mm.

Specimens examined. YNU: KG- 2♂, 2♀, Mt. Cheonma, 1. V. 1987 (Y.I. Cho); 1♂, 2♀, 26. IV. 1970 (J.I. Kim); 2♀, 10. V. 1975 (K.Y. Cho); 2♀ (K.Y. Park); 1♂, 26. IV. 1970 (J.H. Yu); 1♀, 30. IV. 1972 (S.K. Lee); 1♂, 30. IV. (S.W. Lee); 1♂, 30. IV. (S.N. Chei); 1♂, 30. IV. (Y.C. Chung); 1♀, Uidong, 5. V. 1961; 1♀, Palya-ri, Namyangju, 3. V. 1986 (S.H. Kim); 1♀, Aengmubong, 9. V. 1971 (S.K. Lee); 1♀, 9. V. (S.H. Nam); 1♀, 9. V. (K.K. Shin); 1♂, 9. V. (S.N. Chei); 1♂, Mt. Cheonggye, 21. IV. 1985 (K.W. Maa); 1♂, 1♀, 21. IV. (O.S. Kwon); 1♂, 21. IV. (S.B. Lim); 1♀, Dongducheon, Mt. Soyo, 15. V. 1986 (Y.J. Park); 1♀, Mt. Yongmun, 19. V. 1973 (O.J. Lee); 1♂, Pocheon, 25. IV. 1975 (S.I. Kang); KB- 1♀, Bulyeongkyegok, Ulchin, 10. V. 1991 (H.K. Kim); 1♀, Morai-dong, 17. V. 1966 (Y.T. No); KN- 1♀, Jeyak, Miryang, 26. IV. 1998 (L.S. Kim). EWU: KG- 1♀, Mt. Cheonggye, 4. V. 1984 (S.Y. Hwang). KU: KG- 1♀, Mt. Cheonma, 21. IV. 1985 (O.S. Kwon); 1♂, 7. V. 1961 (K.S. Park). SNU: KG- 1♂, 1♀, Suwon, 5. IV. 1957 (D.S. Lee).

Distribution. Korea, Japan, Mongolia, Siberia, Asia Minor, and Europe.

Genus *Trichiosoma* Leach, 1817 호리배수중다리잎벌속

Trichiosoma Leach, 1817, The Zool. Misc. 3: 108. Type species: *Tenthredo lucorum* Linnaeus (Designation by Curtis, 1825).

***Trichiosoma opaca* Konow, 1906 호리배수중다리잎벌**

(Figs 29, 53)

Trichiosoma opaca Konow, 1906, Zeitschr. Sust. Hym. Dipt. 6: 122; Takeuchi, 1939: 418; Kim, 1963: 281, 1970: 155, 720; Kim *et al.*, 1994: 219.

Trichiosoma jozankeanum Matsumura, 1931, 6000 Ill. Ins. of Japan-empire: 92; Takeuchi, 1931: 14.

Diagnosis. Head, mesonotum and dorsum of abdomen opaque. Scutellum and tergite covered with yellowish hairs. Antennal club stout and about as long as the preceding two segment together. Tergites black and covered white hairs.

Measurements. OOD/MOD: 1.97, POD/OOD: 2.49, MOD/IOD: 0.59, OOD/IOD: 1.13, Body length: 19.9 mm, Fore wing length: 20.0 mm, Hind wing length: 12.5 mm.

Specimens examined. YNU: KW- 1 ♀, Paekdamsa, Mt. Seorak, 3-6. VI. 1979 (S.H. Jeung); 1 ♀, Pukdaesa, 4. VI. 1996 (J.W. Kim); KG- 1 ♂, Mt. Cheonma, 23. IV. 1961 (W.S. Sim); 1 ♂ (J.S. Lee); 1 ♂ (J.K. Lee); KB- 1 ♂, Sangin-dong, Dalbigoll, Taegu-si, 21. VI. 1994 (T.D. Kim); 1 ♂, Suchul-ri, Yeongju, 25. V. 1996 (M.H. Yoon); CB- 1 ♂, Muju Kucheon-dong, 21. V. 1983 (J.S. Choi); 1 ♂, 23. V. 1997 (J. W. Lee). NSMT: 3 ♀, KW- Mirugam (Pukdaesa) 1300 m, Mt. Odae, 23. V. 1989; 1 ♀, 30. V. 1992; 1 ♀, 31. V. 1993; 2 ♀, 1. VI. 1997; 1 ♀, 6. VI. (A. Shinohara).

Distribution. Korea, Japan, Saghalien, and Siberia.

***Trichiosoma sachalinense* Matsumura, 1911 화태수중다리잎벌**

(Figs 19, 39)

Trichiosoma sachalinensis Matsumura, 1911, Journ. Coll. Agr. Tohoku Imp. Univ., Sapporo IV: 86, 1931: 92.

Trichiosoma sachalinense: Takeuchi, 1931, Trans. kansai Ent. Soc. 2: 14, 1936: 65, 1939: 418; Kim, 1963: 281, 1970: 155, 720; Togashi, 1973: 109; Kim *et al.*, 1994: 219.

Diagnosis. Head, mesonotum and dorsum of abdomen shining. Tergites covered shine yellow hairs. First and second tergites black. Apical margin of third tergite brown, inner area black.

Measurement. OOD/MOD: 1.77, POD/OOD: 2.16, MOD/IOD: 0.63, OOD/IOD: 1.11, Body length: 15.4 mm, Fore wing length: 16.7 mm, Hind wing length: 10.4 mm.

Specimens examined. KW- 1 ♀, Mt. Kyebang, 22. VII. 1981 (S.H. Nam); 1 ♀, Hyangnobong, 13. VI. 1992 (J.W. Lee); 2 ♀, 13. VI. (S.M. Ryu); KB- 1 ♂, 1 ♀, Huibangsa 750 m, Mt. Sobaek, 20. V. 1987. NSMT: KW- 1 ♂, Mirugam (Pugdaesa) 1300 m, Mt. Odae, 8. VI. 1987; 2 ♂, 10. VI.; 2 ♂, 11. VI.; 1 ♂, 19. V. 1989; 1 ♂, 21. V.; 1 ♂, 26. V.; 2 ♂, 1 ♀, 27. V.; 2 ♂, 1 ♀, 29. V. 1991; 1 ♀, 31. V.; 1 ♀, 31. V. 1993; 1 ♂, 29. V.-1. VI. 1996; 1 ♂, 6. VI. 1996; 2 ♀, 1. VI. 1997; 1 ♀, 6. VI. 1997 (A. Shinohara).

Distribution. Korea, Japan, Saghalien, Siberia, and Kamtchatka.

***Trichiosoma vitellinae* Linnaeus, 1761** 가시수중다리잎벌

(Figs 20, 49)

Tenthredo vitellinae Linnaeus, 1761, Laur. Salvii, Stockholm: 389.*Trichiosoma vitellinae*: Andr , 1879, Species des Hym nopt res d'Europe et d'Alg re. 5: 28; Schulze, 1914: 87; Enslin, 1917: 578; Malaise, 1931: 61; Obenberger, 1940: 232; Berland, 1947: 420; Kim, 1970: 147, 720, 1980: 19; Kim *et al.*, 1994: 219.**Diagnosis.** Propodeum with white or yellowish white hairs. Apical margin of second to seventh tergites red or reddish brown; inner area of last tergite with small black spot.**Measurement.** OOD/MOD: 1.87, POD/OOD: 2.37, MOD/IOD: 0.62, OOD/IOD: 1.14, Body length: 16.8 mm, Fore wing length: 18.5 mm, Hind wing length: 11.1 mm.**Specimens examined.** YNU: KW- 1 ♀, Hyangnong, 13. V. 1992 (S.M. Ryu); 1 ♀ (H.K. K.); 1 ♀, Mt. Taebaek, 14. V. 1992 (S.M. Ryu); 1 ♀, Jiamri, 10. V. 1990; KG- 1 ♀, Palya-ri, Namyangju, 3. V. 1986 (S.H. Kim); 1 ♀, 3. V. 1986 (E.J. Lee); 1 ♀, Kwangneung, 26. IV. 1964 (C.J. Kim); 1 ♀, 28. V. 1972; 1 ♂, Mt. Cheonma, 23. IV. 1961 (C.S. Lee); 1 ♂ (Y.B. Yu); 1 ♂, 7. V. 1961 (J.G. Yu); 1 ♀, 11. IV. 1971 (D.S. Kwang); 1 ♀, 30. IV. 1972 (S.N. Chei); 1 ♀, Namhansanseong, 2. V. 1976 (S.M. Lee); 1 ♀, Ui-dong, 5. V. 1961 (Jae); CB- 1 ♀, Mt. Sobaek, 12. V. 1994 (E.J. Chei); 1 ♂, 24. V. 1996 (J.B. Park); 1 ♂, 3. V. 1997 (Y.C. Bae); KB- 1 ♂, Imgye, Cheongseon-gun, 6-7. V. 1984. NSMT: KW- 1 ♀, Mirugam (Pugdaesa) 1300 m, Mt. Odae, 8. VI. 1987; 1 ♀, 21. V. 1989; 1 ♀, 23. V.; 1 ♀, 26. V.; 1 ♀, 27. V.; 1 ♀, 28. V.; 1 ♀, 13-16. V. 1990; 1 ♀, 29. V. 1992; 1 ♂, 1 ♀, 30. V. 1993; 1 ♂, 29. V. - 1. VI. 1996; 1 ♂, 6. VI. 1997, 1 ♀ (A. Shinohara). SNU: 1 ♂, 1 ♀, Suwon, 6. V. 1957 (Lee); 1 ♀, Pugdaesa, Mt. Odae, 4. VI. 1996 (J.W. Kim).**Distribution.** Korea, Japan, and Europe.**Genus *Praia* Wankowitz, 1881** 호리배수중다리잎벌속 (新稱)*Praia* Andr , 1881, Spec. Hym. Eur. 1: 572. Type species: *Praia taczanowskii* Andr  (monobasic).***Praia ussuriensis* Malaise, 1939** 호리배수중다리잎벌

(Figs 30, 40, 54)

Praia ussuriensis Malaise, 1939, Ent. Tidskr. 9: 1-40; Kim *et al.* Shinohara, 36(3): 203.**Diagnosis.** Frons covered with yellowish hairs. Posterior margin of the abdominal tergites yellow.**Measurement.** OOD/MOD: 2.20, POD/OOD: 1.10, MOD/IOD: 0.49, OOD/IOD: 1.07, Body length: 12.6 mm, Fore wing length: 12.7 mm, Hind wing length: 7.9 mm.**Specimens examined.** YNU: KW- 1 ♀, Mt. Taebaek, 14. V. 1992 (Y.M. Kim); 1 ♀, 14. V. (S.M. Ryu); 1 ♀, Mt. Sorak, 22. IV. 1984 (T.Y. Moon); KG- 1 ♀, Cheonggye, 19. IV. 1986 (Y.T. Joung); 1 ♀, Pogwangsa, Aengmubong, 15. IV. 1984 (K.S. Chei); 1 ♂, Aengmubong, 17. IV. 1983 (H.S. Jung);

Seoul- 1 ♂, Heoninneung, Kangnam, 20. IV. 1985 (H.J. Yoon). KU: KG- Palya-ri, Namyangju, 1 ♀, 3. V. 1986 (H.W. Yu); 1 ♀, 3. V. (K.A. Park). KGNU: KW- 1 ♀, Cheoram, Taebaek-shi, 14. V. 1991 (H.K. Kim).

Distribution. Korea, Japan, Saghalien, Ussuri, and Siberia.

ACKNOWLEDGEMENTS

We are very grateful to Dr. K.T. Park, Dr. I.B. Yoon, Dr. J.S. Park Dr. A. Shinohara and J.I. Kim for arranging the loan of the specimens of Cimbicidae available for the present study. This study was supported in part by a grant from Yeungnam University (1999).

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韓國產 수중다리잎벌과 (벌목, 잎벌亞目)의 分類學的 고찰

李 鍾 郁 · 鄭 鍾 喆

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본 수중다리잎벌과의 연구는 국내외 소장표본과 1997년 3월부터 1999년 9월까지 남한 전역에서 채집한 표본 등 500여 개체를 대상으로 하여 진행되었다. 본 연구 결과 한국산 수중다리잎벌과는 *Zaraea aurata* Takeuchi (꼬마금빛수중다리잎벌), *Zaraea fasciata* Linnaeus (삼각금빛수중다리잎벌), *Agnocimbex eoa* Semenov-Tian-Shanskij (흑무늬수중다리잎벌)의 3미기록종을 포함하여 2아과 10속 22종으로 밝혀졌다.

검색어 : 잎벌아목, 수중다리잎벌과, 수중다리잎벌아과, 구리수중다리잎벌아과, 분류, 고찰

(Received: August 25, 1999)

(Accepted: October 27, 1999)